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and/or sequence listing

and/or table

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Doc Code: Artifact

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Artifact Type Code: P

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Artifact Type Code: S

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Artifact Type Code: U

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Stapled Set(s) Color Documents or B/W Photographs

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Doc Code: Artifact Artifact Type Code X

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Other, description: _____

Doc Code: Artifact Artifact Type Code: Z



US005954671A

United States Patent [19]

O'Neill

[11] Patent Number: **5,954,671**
 [45] Date of Patent: **Sep. 21, 1999**

[54] BONE HARVESTING METHOD AND APPARATUS

[76] Inventor: **Michael J. O'Neill**, 2071 Washington St., Hanover, Mass. 02339

[21] Appl. No.: **09/221,240**

[22] Filed: **Dec. 28, 1998**

Related U.S. Application Data

[60] Provisional application No. 60/082,340, Apr. 20, 1998.

[51] Int. Cl.⁶ **A61B 5/00**

[52] U.S. Cl. **600/567; 606/179**

[58] Field of Search 600/566, 567;
606/179, 170; 604/164

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Primary Examiner—Michael Buiz

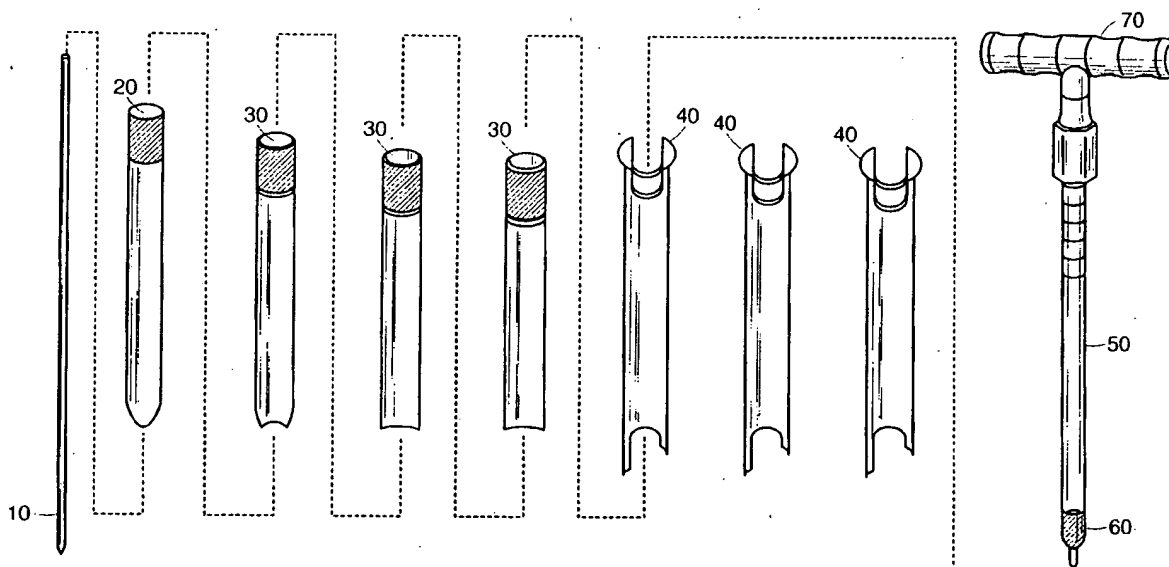
Assistant Examiner—Julian W. Woo

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[57] ABSTRACT

An apparatus and method for harvesting bone using a manual, cylindrical, multi-directional coring device with a guided delivery system that can be inserted through a percutaneous or closed approach to extract precisely measured amounts of bone or bone marrow. A series of guide wires, obturators, dilators and cannulas are used as the exposure and delivery instrumentation for a cutting tool. The cutting tool has a tip with six cutting edges for cutting in all directions.

15 Claims, 6 Drawing Sheets



The
United
States
of
America



The Commissioner of
Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

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